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Morris

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(54) **UTILITY RACK**

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(51) **Int. Cl.**

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B60R 9/06	(2006.01)
B60R 11/00	(2006.01)

(52) **U.S. Cl.**

CPC ***B60R 11/06*** (2013.01); ***B60R 9/06*** (2013.01); *B60R 2011/004* (2013.01); *B60R 2011/0059* (2013.01)

(58) **Field of Classification Search**

CPC B60R 9/06; B60R 11/06; B60R 2011/004; B60R 2011/0059

USPC 224/401, 538, 524; D12/107, 407

See application file for complete search history.

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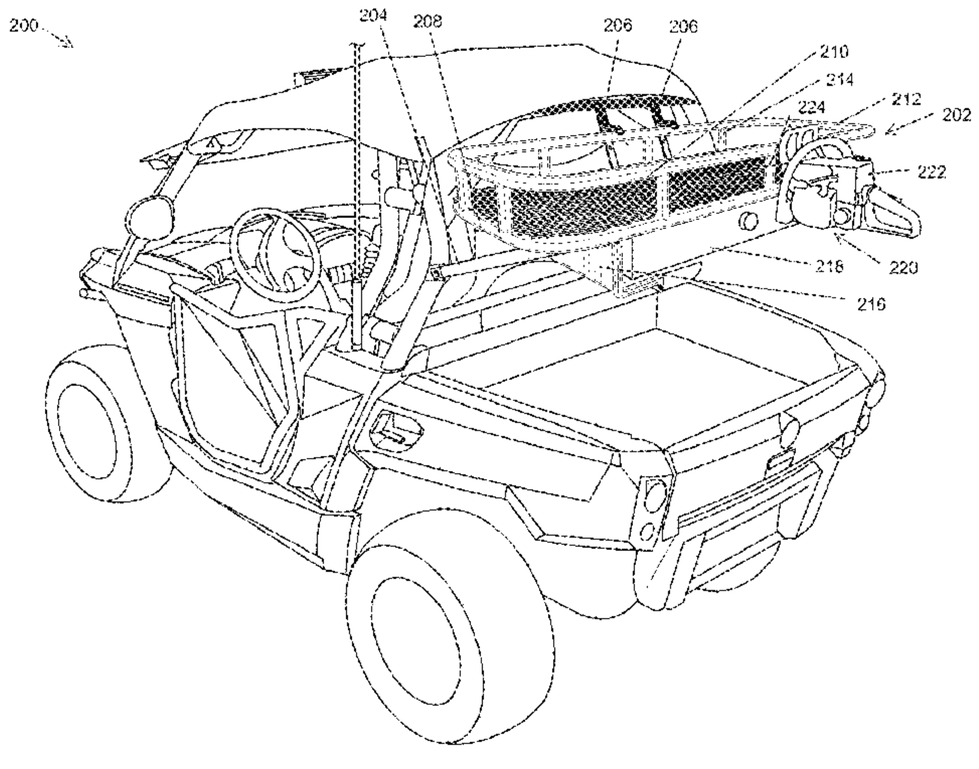
(57) **ABSTRACT**

A utility rack configured for use on a vehicle. The utility rack may include a base, storage surface, and rails coupled to the base via supports. The storage surface may be configured to hold various types of equipment, boxes, and the like. The utility rack may additionally include, on a bottom side of the base, a housing for a storage container and a housing for utility equipment. In at least one example, the storage container may be configured to house liquids, such as gasoline or diesel fuel for the vehicle.

17 Claims, 13 Drawing Sheets



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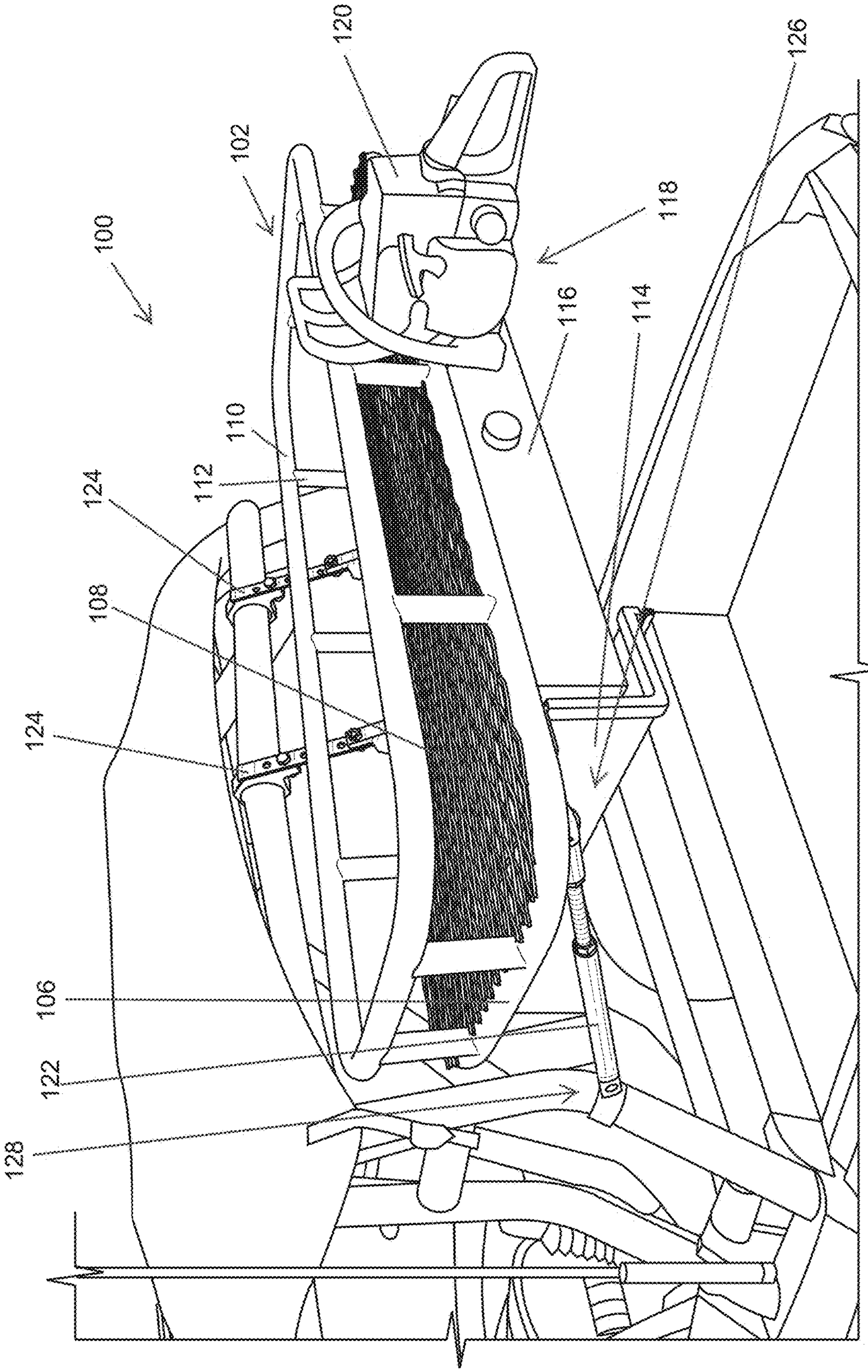


FIG. 1

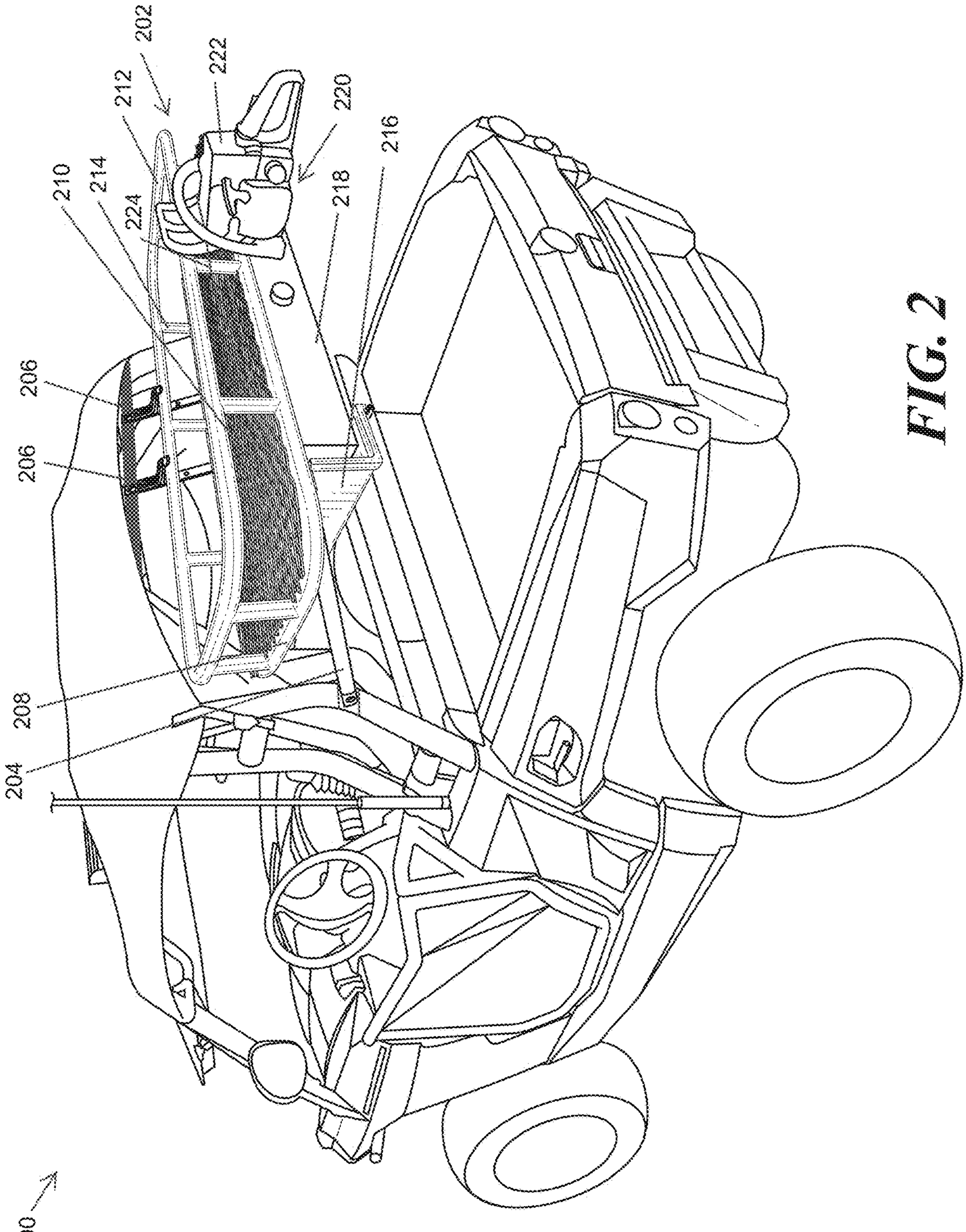
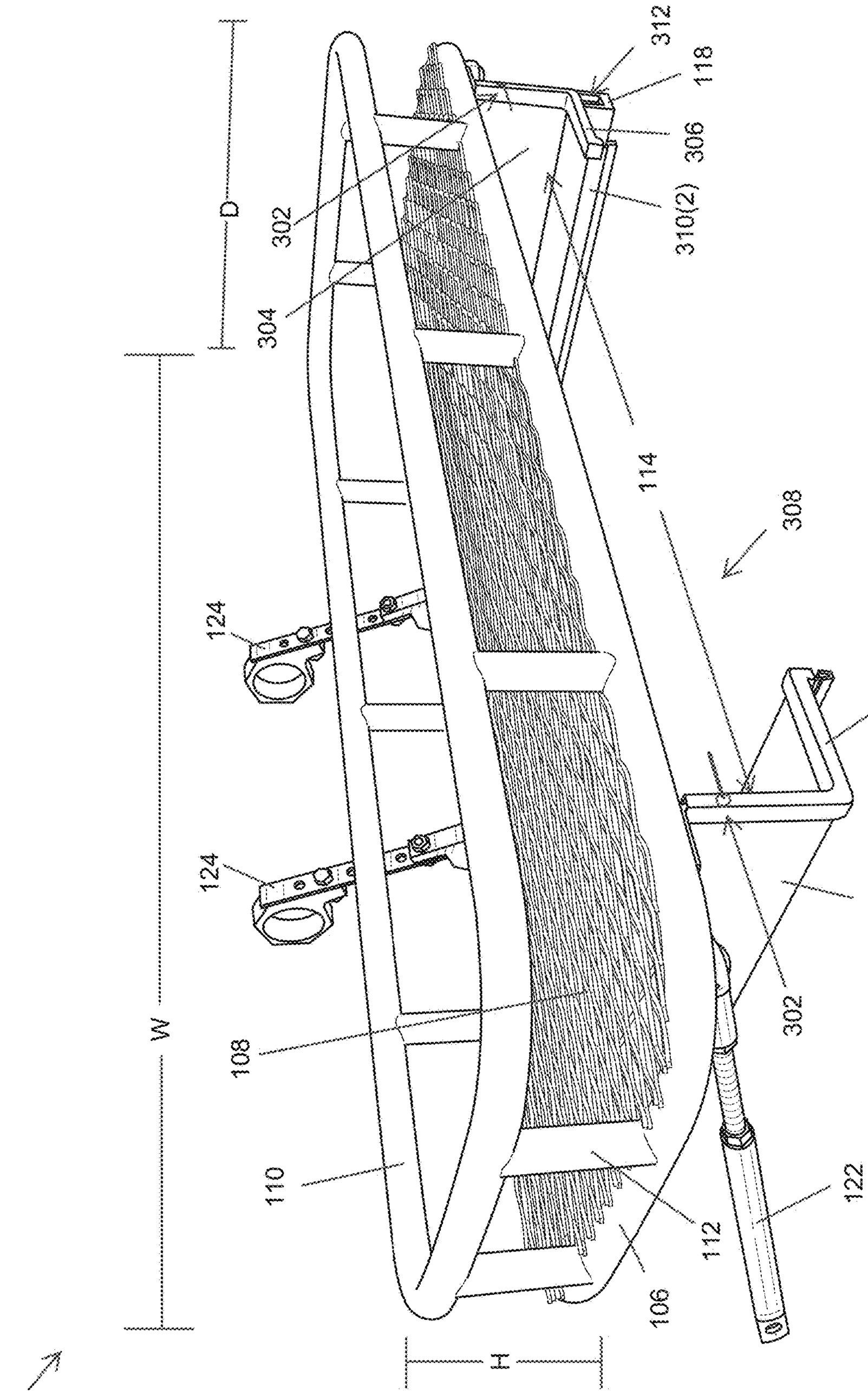


FIG. 2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302
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106
122
102

FIG. 3

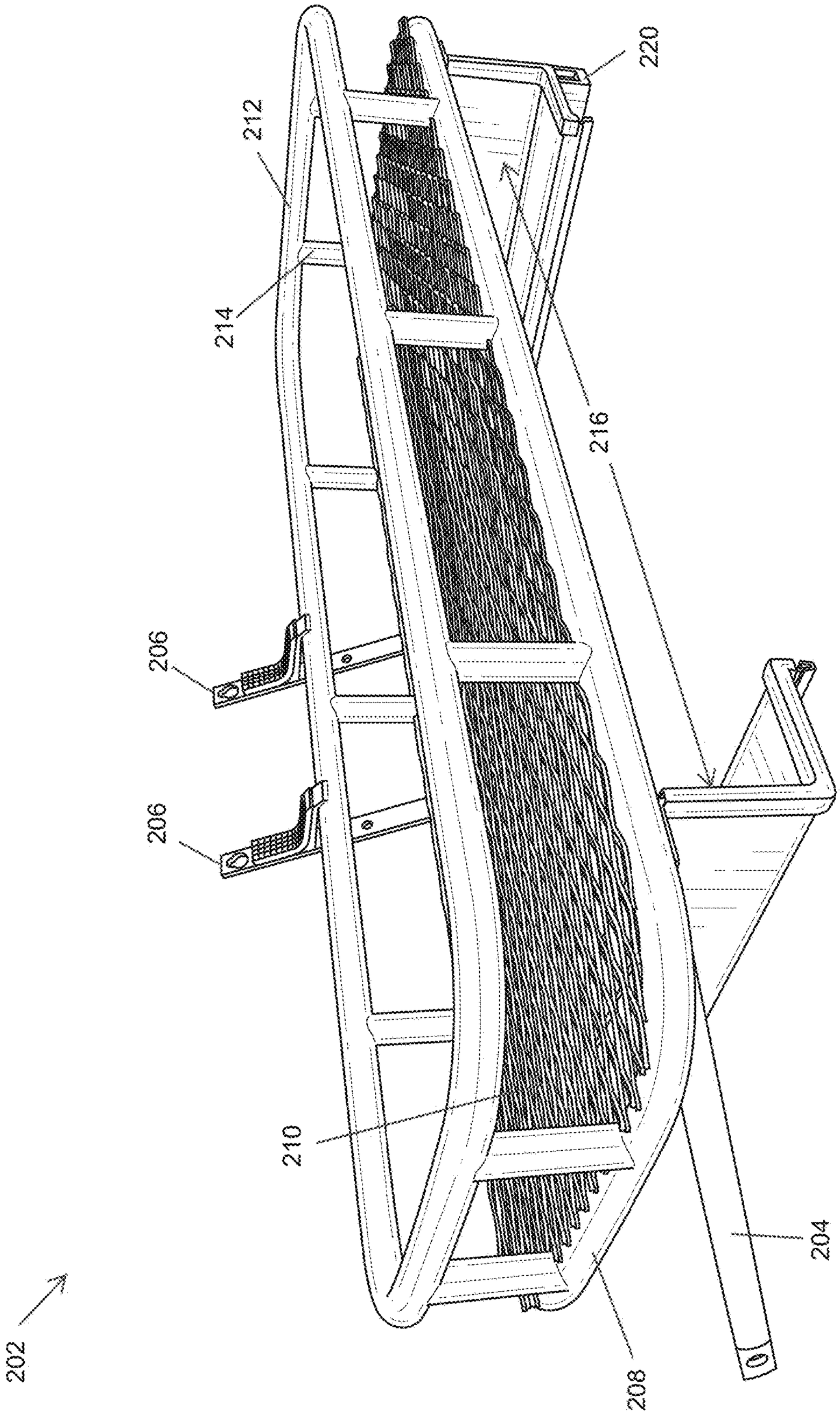

FIG. 4

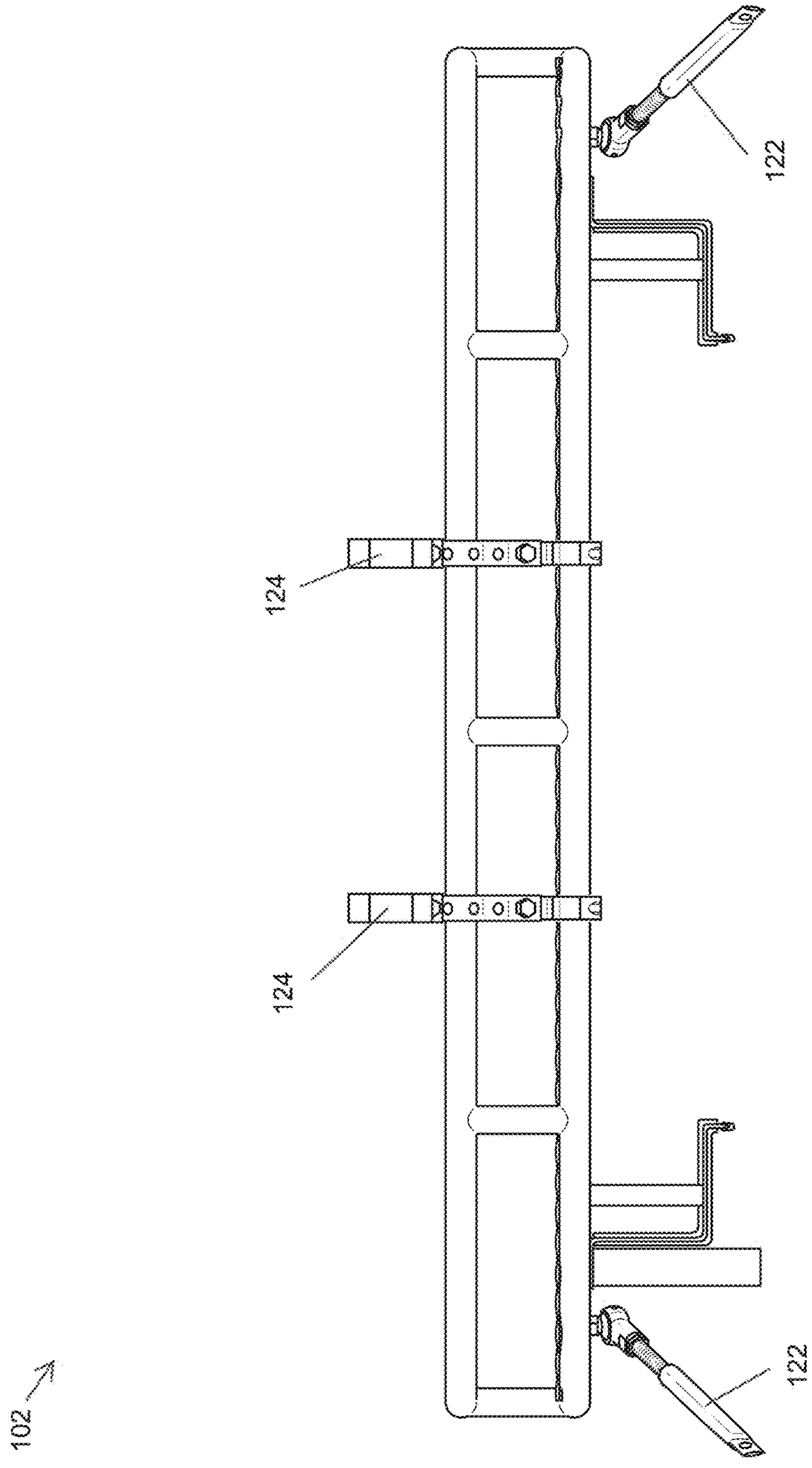

FIG. 5

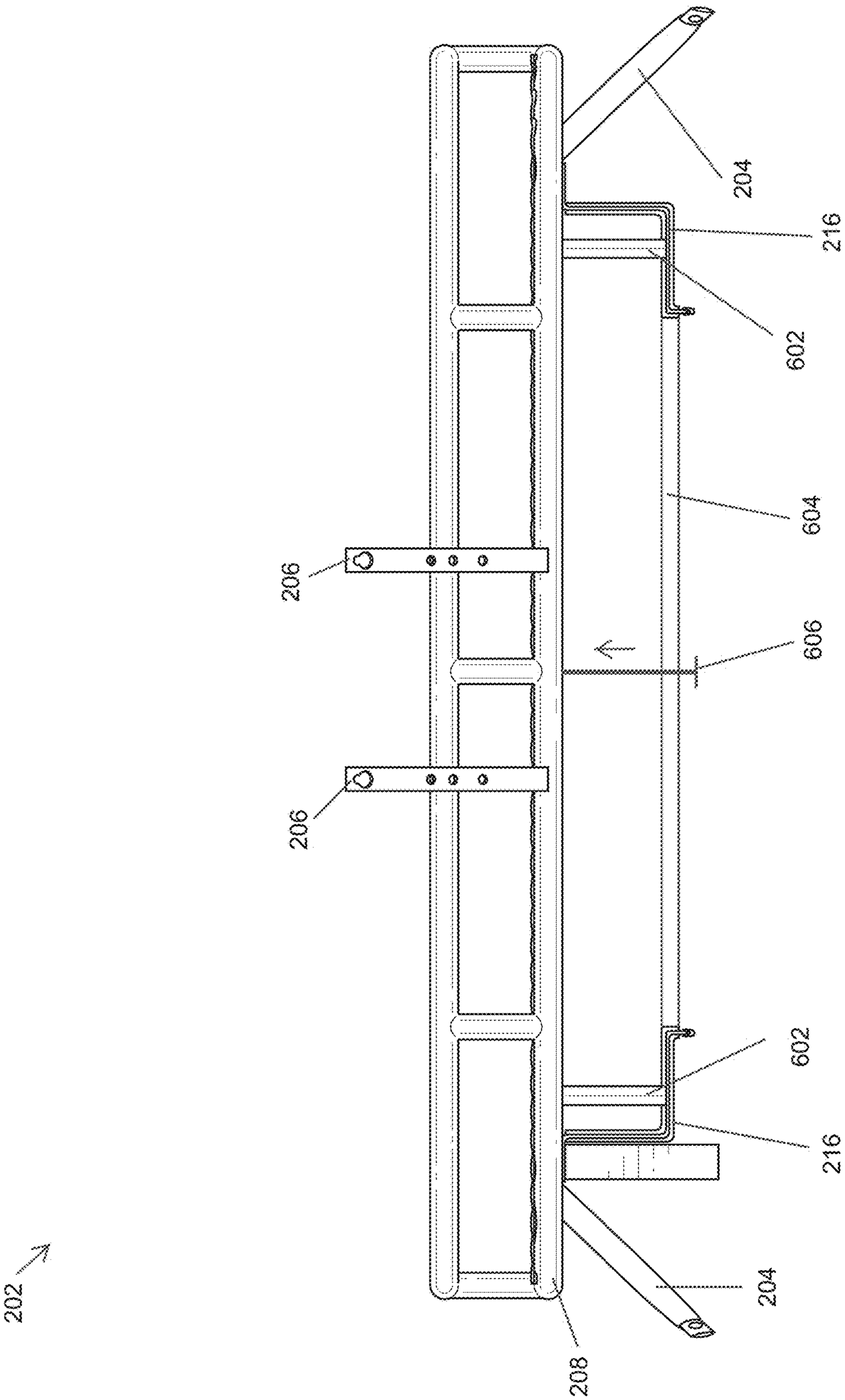

FIG. 6

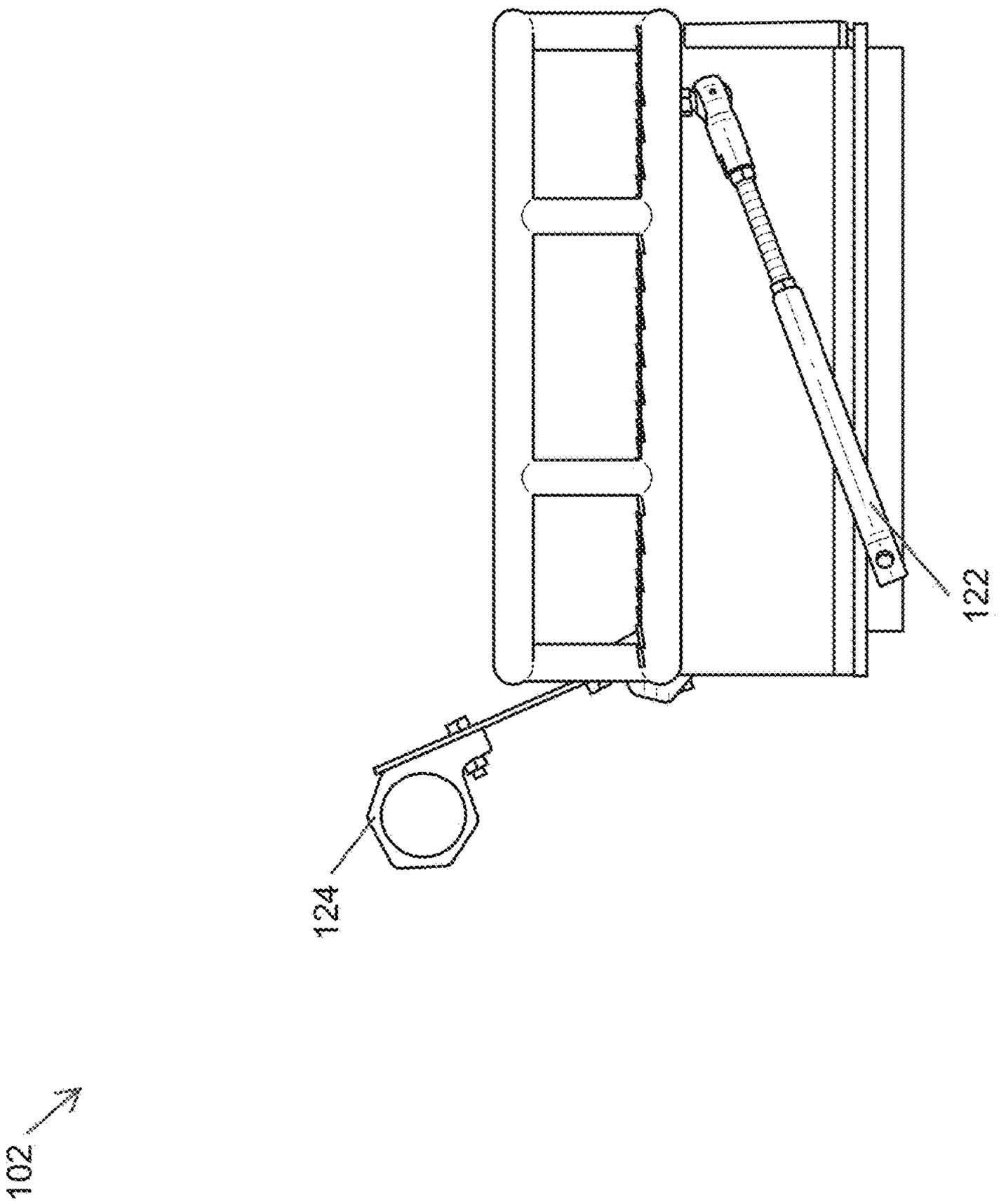

FIG. 7

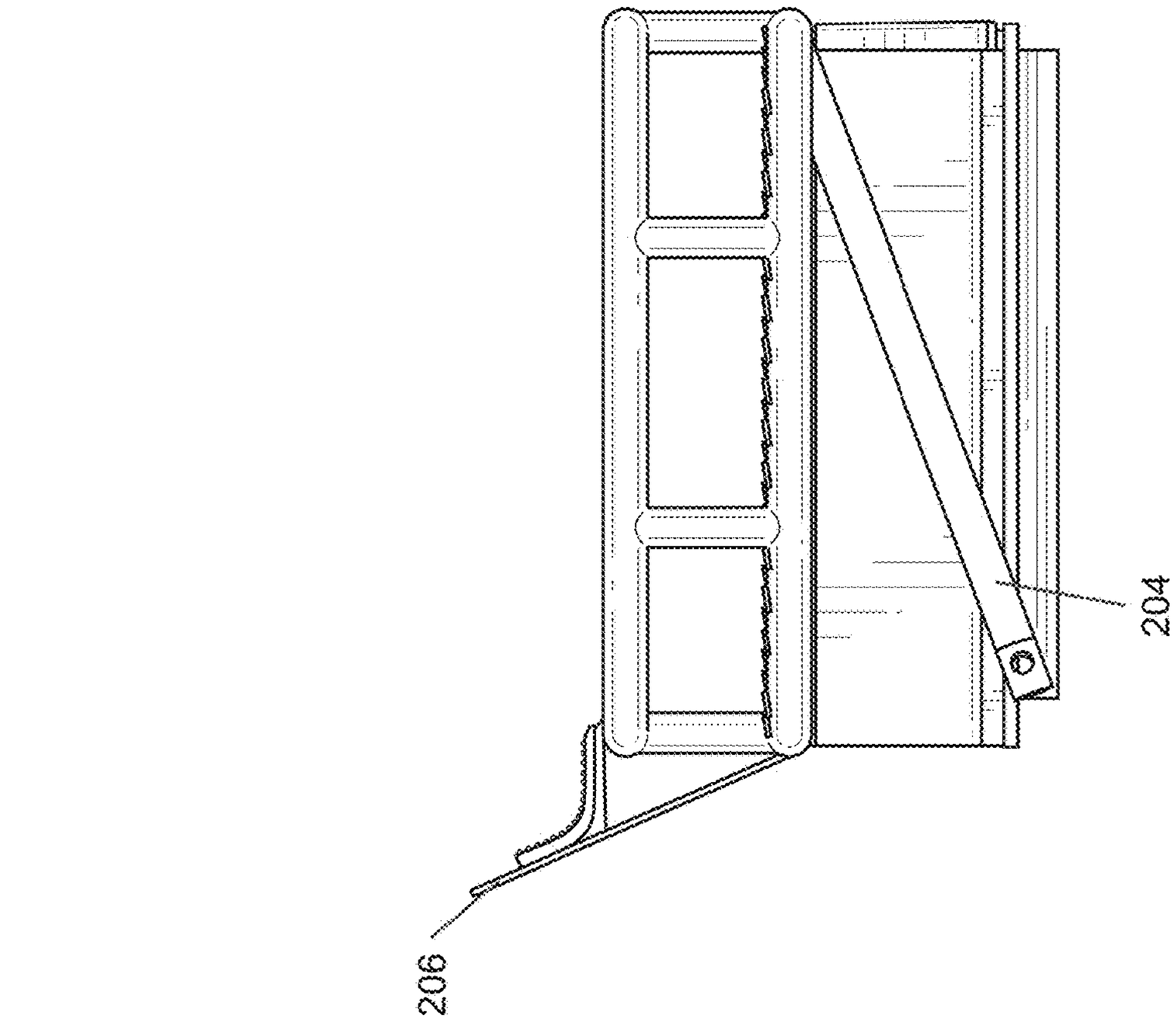

FIG. 8

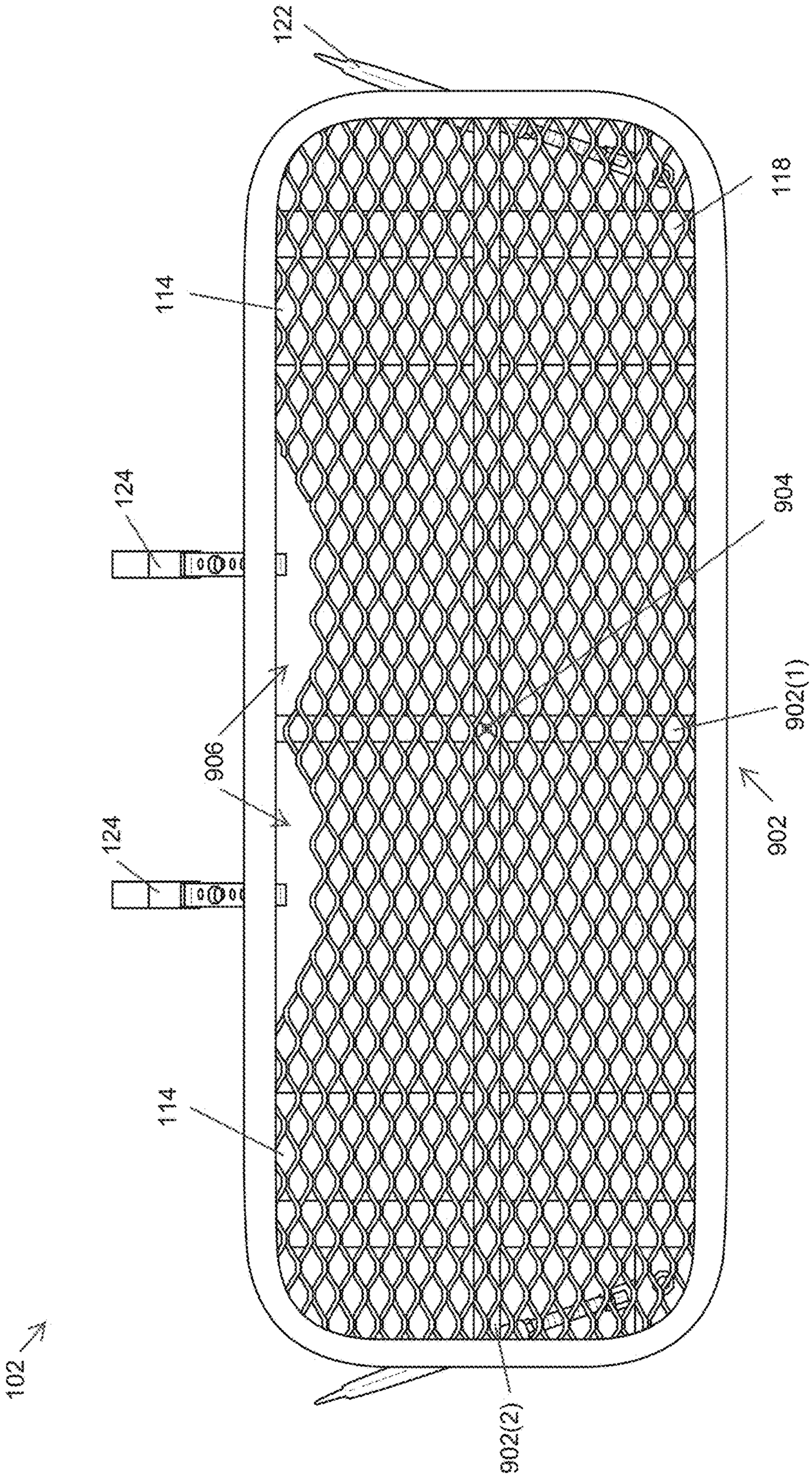

FIG. 9

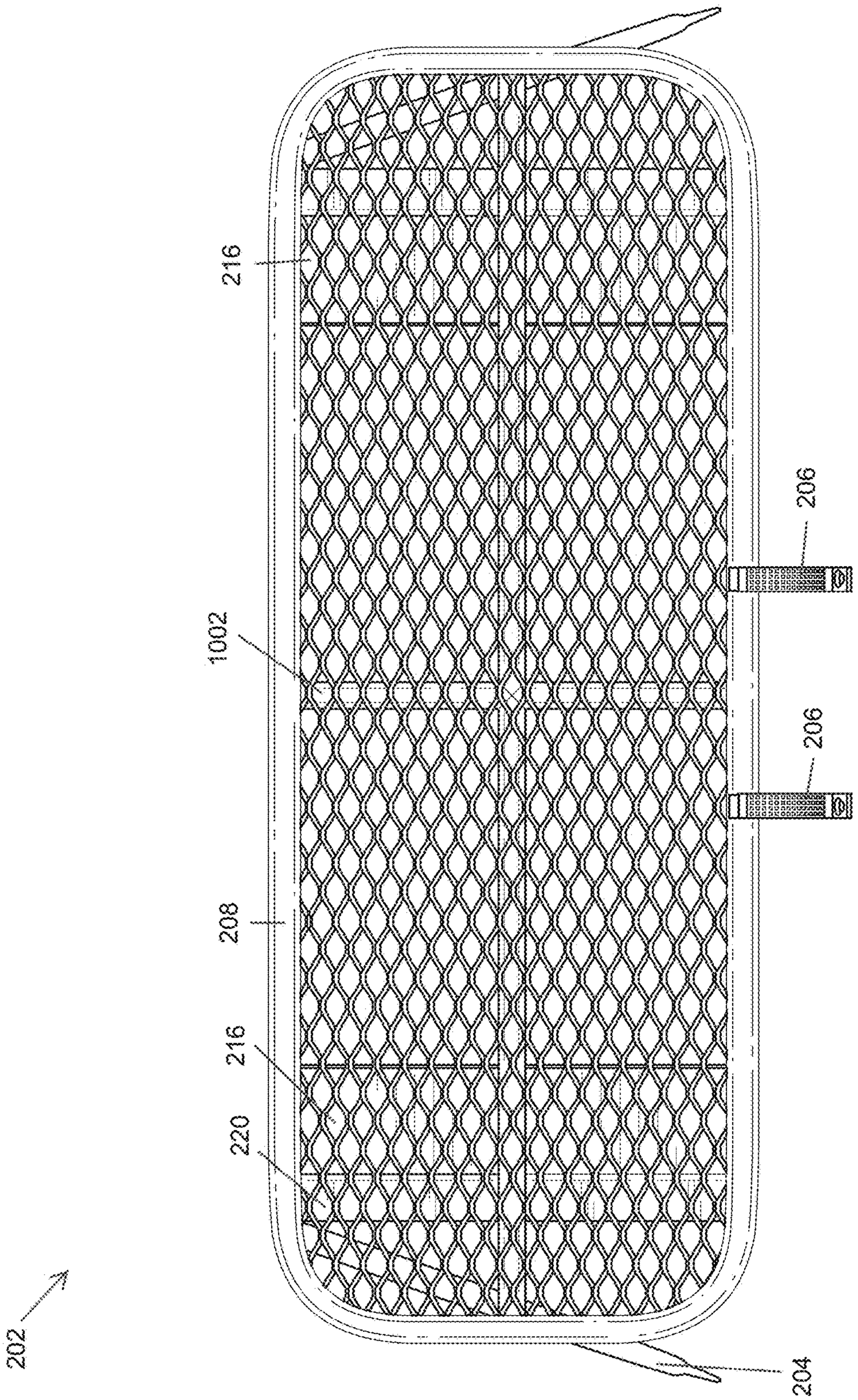

FIG. 10

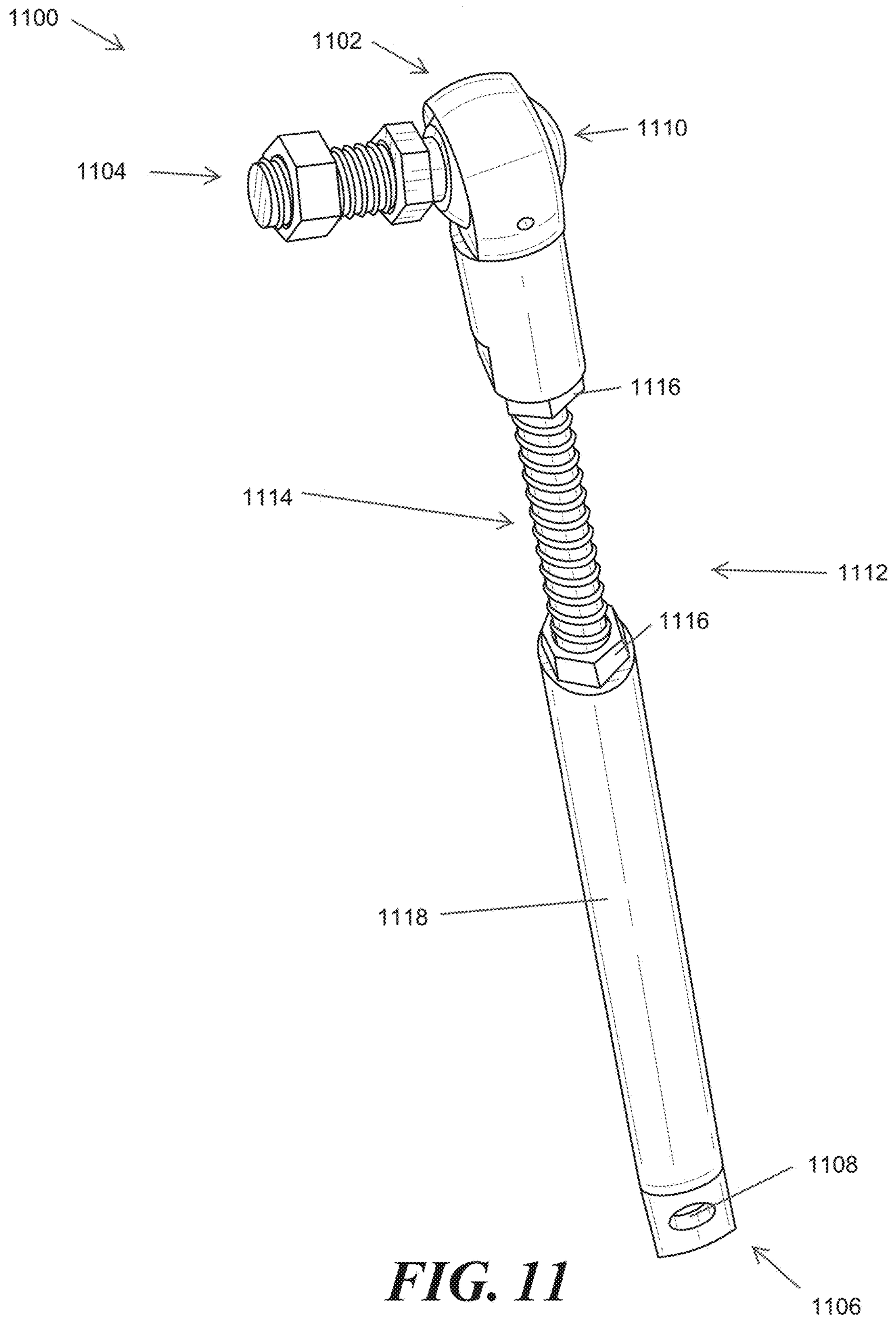

FIG. 11

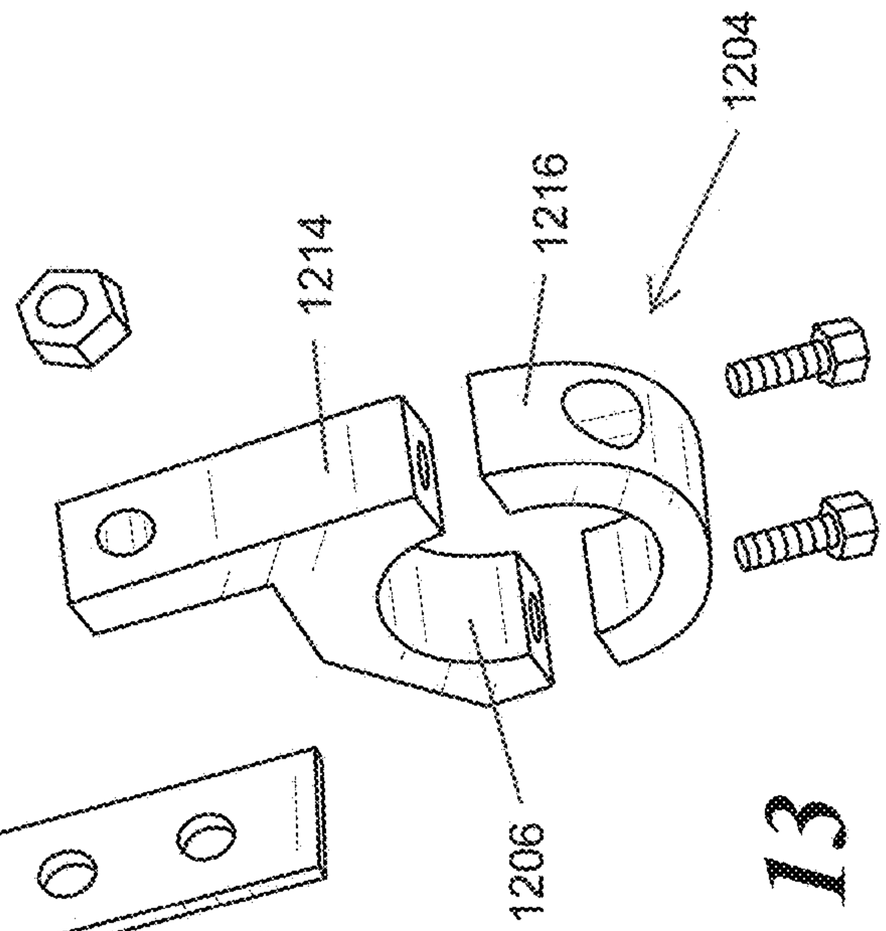
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FIG. 13

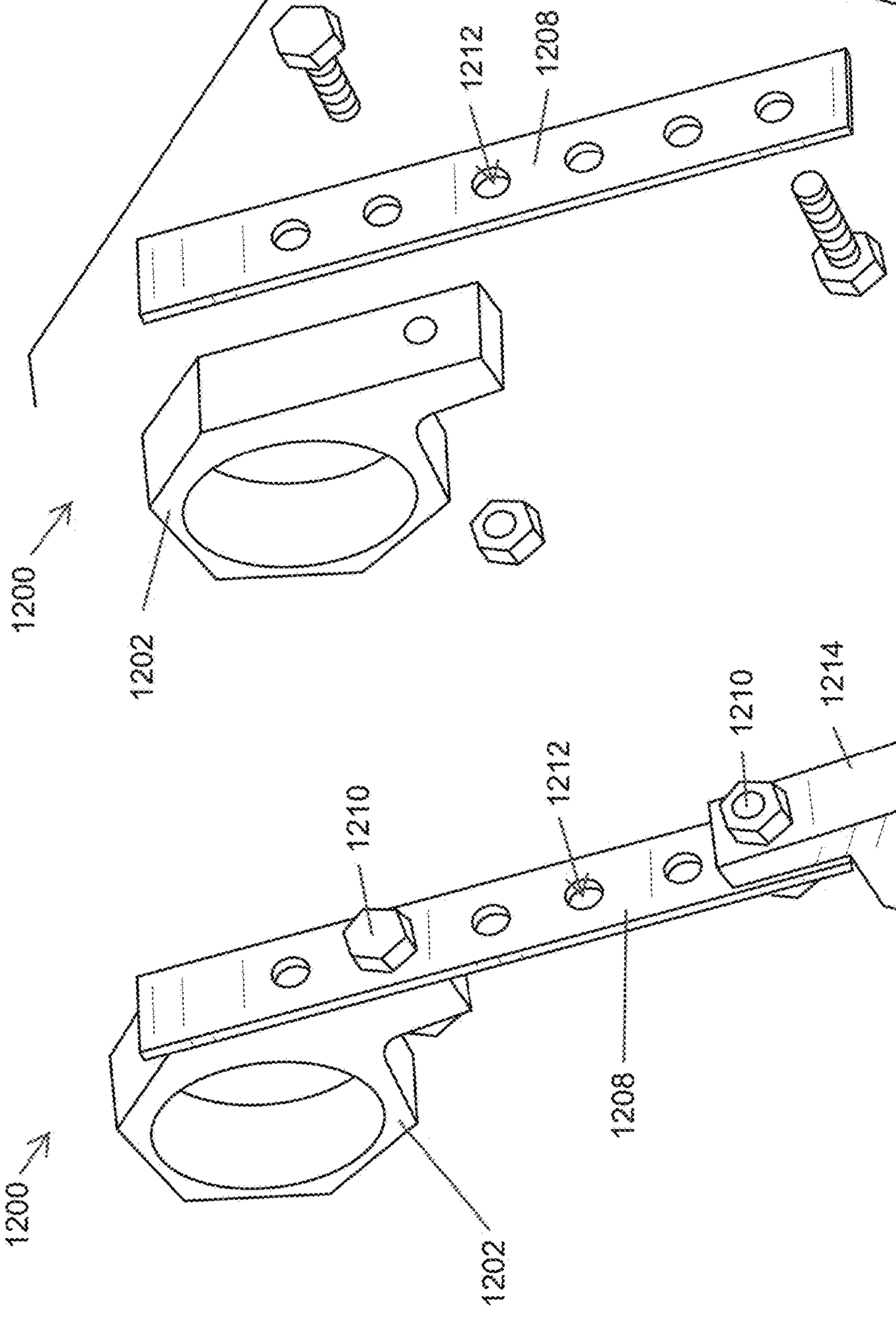
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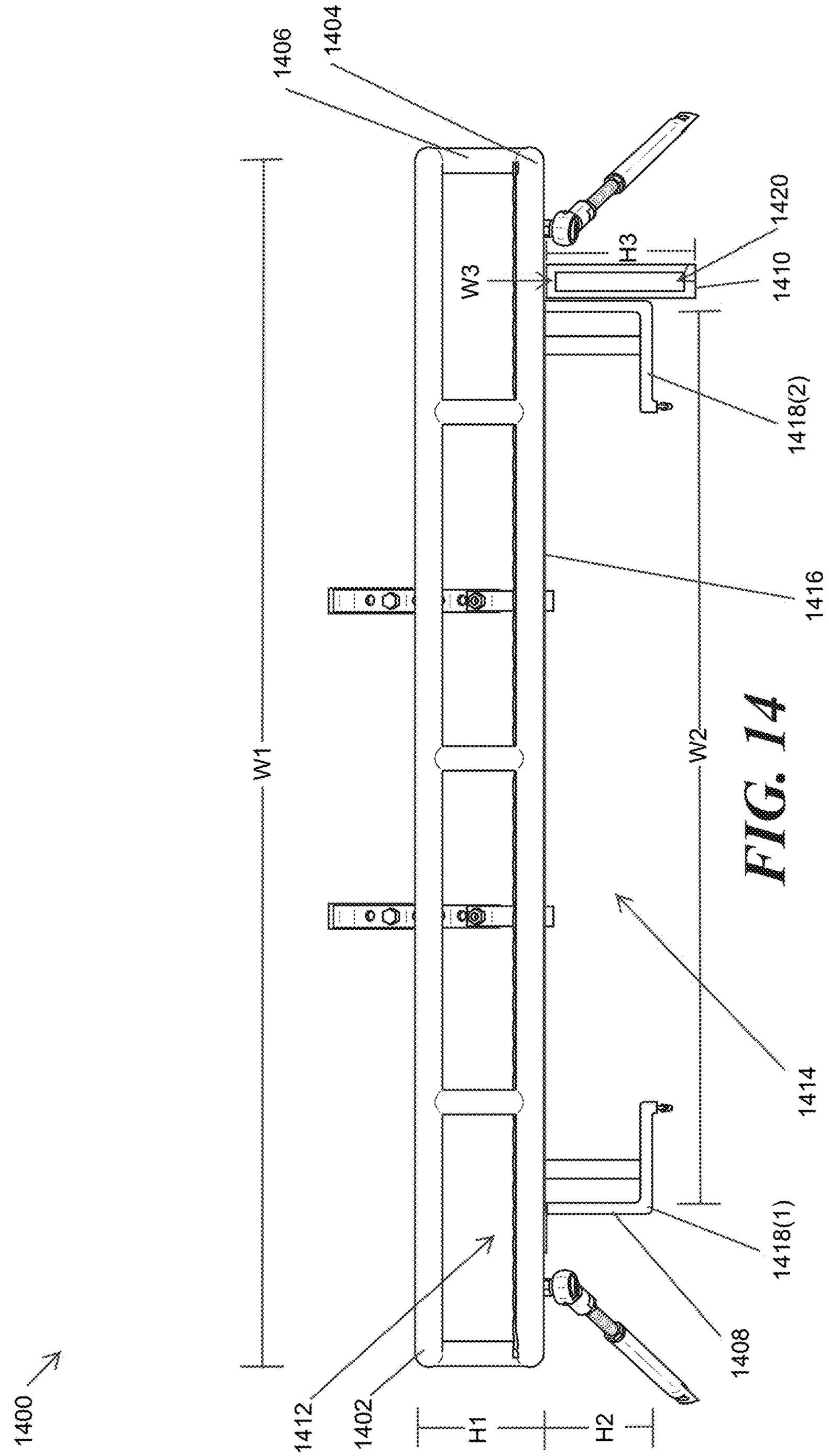
FIG. 12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H1
H2
1400

FIG. 14

UTILITY RACK

PRIORITY

This application is a continuation of and claims priority to U.S. Provisional Patent Application No. 62/894,262, filed Aug. 30, 2019 and entitled "Utility Rack," the entire contents of which are incorporated herein by reference.

BACKGROUND

Racks are commonly used in conjunction with vehicles to carry additional cargo that may not fit within the vehicles. Traditionally, racks are designed to attach to a tow hitch mount or a roof mounting system. However, this traditional rack mounting system may not be viable for smaller vehicles and/or vehicles without tow hitch mounts or roof rack mounts.

BRIEF DESCRIPTION OF THE DRAWINGS

The detailed description is described with reference to the accompanying figures. In the figures, the left-most digit(s) of a reference number identifies the figure in which the reference number first appears. The same reference numbers in different figures indicate similar or identical items.

FIG. **1** is a perspective view of an example utility rack with adjustable coupling mechanisms mounted on a utility vehicle.

FIG. **2** is a perspective view of a utility vehicle with an example utility rack with fixed coupling mechanisms mounted thereon.

FIG. **3** is a front perspective view of an example utility rack with adjustable coupling mechanisms.

FIG. **4** is a front perspective view of an example utility rack with fixed coupling mechanisms.

FIG. **5** is a rear view of an example utility rack with adjustable coupling mechanisms.

FIG. **6** is a rear view of an example utility rack with fixed coupling mechanisms.

FIG. **7** is a side view of an example utility rack with adjustable coupling mechanisms.

FIG. **8** is side view of an example utility rack with fixed coupling mechanisms.

FIG. **9** is a top view of an example utility rack with adjustable coupling mechanisms.

FIG. **10** is a top view of an example utility rack with fixed coupling mechanisms.

FIG. **11** depicts an example adjustable side coupling mechanism for use on a utility rack.

FIG. **12** depicts an example adjustable rear coupling mechanism for use on a utility rack.

FIG. **13** is an exploded view of components of the adjustable rear coupling mechanism of FIG. **12**.

FIG. **14** is a front view of an example utility rack, as described herein.

DETAILED DESCRIPTION

This disclosure is generally directed to a utility rack. The utility rack may comprise a storage surface (e.g., storage area) coupled to a base, and one or more rails coupled to the base via vertical supports. The utility rack may be configured to couple to a vehicle via one or more rear coupling mechanisms and/or one or more side coupling mechanisms. The rear and/or side coupling mechanisms may be fixed and/or adjustable. In various examples, the utility rack may

be configured to house a storage container and/or utility equipment. In such examples, the utility rack may include a housing for the storage container and/or the utility equipment, the housing being coupled to the base and located underneath the storage surface.

In various example, the utility rack may be coupled to the vehicle by securing a first rear coupling of the utility rack to a first component of the vehicle, and a second rear coupling of the utility rack to the first component of the vehicle. The utility rack may further me coupled to the vehicle by securing a first side coupling of the utility rack to a second component of the vehicle and a second side coupling of the utility rack to a third component of the vehicle. In various examples, a storage container may be inserted into a first housing of the utility rack and a blade of a chainsaw may be inserted into a second housing of the utility rack.

The apparatuses and techniques described herein may be implemented in a number of ways. Example implementations are provided below with reference to the following figures.

FIG. **1** is a perspective view of utility vehicle **100** on which an example utility rack **102** may be mounted. The utility rack **102** may comprise a base **106**, storage surface **108**, and a rail **110** coupled to the base **106** via supports **112**. Though illustrated as a substantially rectangular shape with rounded corners, the base **106** and/or rail **110** may include any other shape, such as substantially square, ovular, circular, hexagonal, octagonal, or the like. In various examples, the utility rack **102** may include a first housing **114** for a storage container **116** and a second housing **118** for utility equipment **120**.

In various examples, the components of the utility rack **102** may be manufactured via traditional manufacturing techniques. In some embodiments, the components may be manufactured by 3-D manufacturing techniques, casting, molding, forming, machining, composite manufacturing, or any other method of manufacturing. In some embodiments, the metal may be hardened during the manufacturing process.

In various examples, the base **106**, the storage surface **108**, the rail **110**, the supports **112**, and the housings **114** and **118** may comprise a metal material (e.g., aluminum, steel, stainless steel, titanium, iron, alloys thereof, etc.), a plastic material (e.g., high-density polyethylene, acrylic, melamine, polycarbonate, etc.), a composite material (e.g., fiberglass, carbon fiber, etc.), or combinations of the foregoing. In some embodiments, the base **106**, the rail **110**, and the supports **112** may be cast, formed or machined as a solid piece. In various examples, the base **106**, the rail **110**, and/or the supports **112** may be welded together. In some examples, the base **106**, the rail **110**, and/or the supports **112** may be coupled together with other coupling mechanisms, such as screws, bolts, glue, rope, or the like.

In various examples, the storage surface **108** may be coupled to the base **106** utilizing welding techniques and/or via the other coupling mechanisms. As illustrated, the storage surface **108** may be coupled to a top surface of the base **106**. In some examples, the storage surface **108** may be coupled to a bottom side of the base **106**. In some examples, the storage surface **108** may be coupled a portion of the base **106** in between the top surface and the bottom surface. In various examples, the first housing **114** and the second housing **118** may be coupled to the base **106** and/or the storage surface **108**. In such examples, the coupling may include one or more welds, bolts, screws, glue, rope, or the like.

In various examples, the first housing **114** may be configured to house a storage container **116**. The storage container **116** may include a plastic, metal, and/or composite container configured for storing liquid and/or solid material. In at least one example, the storage container **116** may be configured to carry liquid materials, such as water, gasoline, diesel, or the like. The storage container **116** may be detachably coupled to the first housing **114**, such that it is capable of being removed and/or replaced.

In various examples, the second housing **118** may be configured to house utility equipment **120**. The utility equipment **120** may be detachably coupled to the second housing **118**, such that it may be removed and replaced. As will be shown in greater detail below, the second housing **118** may include an opening configured to house at least a portion of the utility equipment **120** (e.g., chain saw, jaw saw, hedge trimmer, shears, and/or any other equipment). In the illustrative example, a blade of a chainsaw is inserted into the second housing **118**, though this is merely for illustrative purposes, and it is contemplated that the second housing **118** may be configured to detachably couple any variety of utility equipment to the utility rack **102**.

As illustrated in FIG. **1**, the utility rack **102** may be coupled to the vehicle **100** via side coupling mechanisms **122** and rear coupling mechanisms **124**. The side coupling mechanisms **122** and the rear coupling mechanisms **124** may comprise a metal material, a plastic material, a composite material, or combinations of the foregoing. In the illustrative example, the side coupling mechanisms **122** and the rear coupling mechanisms **124** are adjustable (e.g., a length thereof is adjustable). In such examples, the utility rack **102** may be configured for use on various vehicles of different sizes and/or shapes. As will be discussed below with respect to FIG. **2**, the side coupling mechanisms **122** and/or the rear coupling mechanisms **124** may be fixed in length (e.g., not adjustable longitudinally), fixed laterally and/or rotationally. In such examples, the utility rack **102** may be configured for use on a particular vehicle (e.g., make, model, etc.). The side coupling mechanisms **122** and the rear coupling mechanisms **124** may couple to various components of the vehicle **100**, such as a roll bar, support beam/bar, attachment point, or the like. In at least one example, two or more rear coupling mechanisms **124** may couple to a same component and each of the side coupling mechanisms **122** may couple to different components of the vehicle **100**.

In various examples, the side coupling mechanism **122** may couple to the base **106** and/or the first housing **114** via a first coupling **126**. The first coupling **126** may include a screw, bolt, band (e.g., rubber band, plastic band, etc.), rope, or other type of coupling. In some examples, side coupling mechanism **122** may couple to a component of the vehicle **100** via a second coupling **128**. The second coupling **128** may include a screw, bolt, band (e.g., rubber band, plastic band, etc.), rope, or other type of coupling. In the illustrative example, the side coupling mechanism **122** may couple to the vehicle **100** (or component thereof) via a column bracket and a screw. In other examples, the side coupling mechanism **122** may couple to the vehicle **100** via a different type of bracket and/or coupling, such as a direct coupling (e.g., bolt, snap-fit connector, etc.) to a surface of the vehicle **100**.

The side coupling mechanisms **122** and the rear coupling mechanisms **124** will be described in further detail below with respect to FIGS. **11-13**.

FIG. **2** is a perspective view of a utility vehicle **200** on which example utility rack **202** may be mounted. The utility rack **202**, such as utility rack **102**, may be mounted on the utility vehicle **200** via fixed side coupling mechanisms **204** and fixed rear coupling mechanisms **206** mounted on a utility vehicle. In various examples, the utility rack **202**, similar to utility rack **102** may include a base **208**, a storage surface **210**, a rail **212**, and supports **214**. Though illustrated as a substantially rectangular shape with rounded corners, the base **208** and/or rail **212** may include any other shape, such as substantially square, ovular, circular, hexagonal, octagonal, or the like. In various examples, the utility rack may include a first housing **216** for a storage container **218** and a second housing **220** for utility equipment **222**.

In various examples, the components of the utility rack **202** may be manufactured via traditional manufacturing techniques. In some embodiments, the components may be manufactured by 3-D manufacturing techniques, casting, molding, forming, machining, composite manufacturing, or any other method of manufacturing. In some embodiments, the metal may be hardened during the manufacturing process.

In various examples, the base **208**, the storage surface **210**, the rail **212**, the supports **214**, and the housings **216** and **220** may comprise a metal material (e.g., aluminum, steel, stainless steel, titanium, iron, alloys thereof, etc.), a plastic material (e.g., high-density polyethylene, acrylic, melamine, polycarbonate, etc.), a composite material (e.g., fiberglass, carbon fiber, etc.), or combinations of the foregoing. In some embodiments the base **208**, the rail **212**, the supports **214** may be cast, formed or machined as a solid piece. In various examples, the base **208**, the rail **212**, and/or the supports **214** may be welded together. In some examples, the base **208**, the rail **212**, and/or the supports **214** may be coupled together with other coupling mechanisms, such as screws, bolts, glue, rope, or the like.

In various examples, the storage surface **210** may be coupled to the base utilizing welding techniques and/or via the other coupling mechanisms (e.g., bolts, screws, glue, rope, etc.). Although illustrated as extending substantially the length and width of the base **208**, in other examples, the storage surface **210** may extend vertically from the base **208** to the rail **212**. In such examples, the storage surface **210** may be coupled to the base, the rail **212**, and/or one or more supports **214** and may be configured to prevent small items (e.g., items smaller than the distance between the base **208** and the rail **212**) from falling out of the utility rack **202**. In various examples, the first housing **216** and the second housing **220** may be coupled to the base **208** and/or the storage surface **210**. In such examples, the coupling may include one or more welds, bolts, screws, glue, rope, or the like.

In various examples, the first housing **216** may be configured to house a storage container **218**. The first housing **216** and components thereof will be described in greater detail below with respect to FIG. **3**. The storage container **218** may include a plastic, metal, and/or composite container configured for storing liquid and/or solid material. In at least one example, the storage container **218** may be configured to carry liquid materials, such as water, gasoline, diesel, or the like. The storage container **218** may be detachably coupled to the first housing **216**, such that it is capable of being removed and/or replaced. In some examples, the storage container **218** may be securely housed in the first housing **216** by a locking mechanism. The locking mechanism will be described in greater detail below with regard to FIG. **3**.

In various examples, the second housing **220** may be configured to house utility equipment **222**. The utility equipment **222** may be detachably coupled to the second housing **220**, such that it may be removed and replaced. In some

examples, the utility equipment **222** may be securely housed in the second housing **220** by a locking mechanism **224**. In such examples, the locking mechanism **224** may include a strap, a clip, an adjustable bar, or the like. In some examples, the locking mechanism **224** may be coupled at one end to a portion of the utility rack **202** (e.g., base **208**, first housing **216**, second housing **220**, support **214**, rail **212**, etc.). In some examples, the locking mechanism **224** may be coupled at another end to a same or a different portion of the utility rack **202**. For example, the first housing **216** may include a coupling configured to receive a first end of strap (e.g., nylon strap, bungee cord, etc.) and a support **214** proximate the second housing **220** may include a second coupling configured to receive a second end of the strap.

As will be shown in greater detail below, the second housing **220** may include an opening configured to house at least a portion of the utility equipment **222** (e.g., chain saw, jaw saw, hedge trimmer, shears, and/or any other equipment). In the illustrative example, a blade of a chainsaw is inserted into the second housing **220**, though this is merely for illustrative purposes, and it is contemplated that the second housing **220** may be configured to detachably couple any variety of utility equipment to the utility rack **202**.

As illustrated in FIG. **2**, the utility rack **202** may be coupled to the vehicle **200** via side coupling mechanisms **204** and rear coupling mechanisms **206**. In the illustrative example, the side coupling mechanisms **204** and the rear coupling mechanisms **206** may include a fixed size (e.g., not adjustable). In such examples, the utility rack **202** may be configured to fit on a utility vehicle **200** of a particular size, shape, style, make, model, etc. (e.g., Polaris® RZR®, Can-Am® Commander™, etc.). Additionally, in the illustrative examples, the side coupling mechanisms **204** are fixed laterally and/or rotationally (e.g., not capable of being adjusted left, right, up, down, etc.). For example, the side coupling mechanisms **204** may include a fixed length. For another example, the rear coupling mechanisms **206** may be welded to the base **208** and/or rail **212** and may include a coupling at a fixed location. In other examples, the side coupling mechanisms **204** and/or the rear coupling mechanisms **206** may be adjustable. In such examples, the side coupling mechanism **204** and/or the rear coupling mechanisms **206** may be adjusted in at least a length to fit multiple different utility vehicles **200**.

FIG. **3** is a front perspective view of an example utility rack **102** including side coupling mechanisms **122** and rear coupling mechanisms **124**. The side coupling mechanisms **122** and the rear coupling mechanisms **124** may comprise a metal material, a plastic material, a composite material, or combinations of the foregoing. In the illustrative example, the side coupling mechanisms **122** and the rear coupling mechanisms **124** are adjustable (e.g., a length thereof is adjustable). In such examples, the utility rack **102** may be configured for use on various vehicles of different size, shape, make, model, etc. The side coupling mechanisms **122** and the rear coupling mechanisms **124** will be described in further detail below with respect to FIGS. **11-13**.

As discussed above, the utility rack **102** may be configured to couple to a utility vehicle, such as utility vehicle **100**. In various examples, the utility rack **102** may be configured to hold equipment, boxes, and the like. In some examples, the base **106** of the utility rack **102** may include width (W) of 30-50 inches. In at least one example, the base **106** may include a width (W) of 38 inches or 46 inches. In some examples, the base **106** of the utility rack **102** may include depth (D) of 10-24 inches. In at least one example, the base **106** may include a depth (D) of 16 inches.

As discussed above, the utility rack **102** may include a rail **110** coupled to the base **106** via a plurality of supports **112**. In various examples, the rail **110** may be situated substantially parallel to the base **106**. In some examples, the rail **110** may include dimensions substantially similar (e.g., less than 0.5 inches difference in width and/or depth) to the base **106**. In some examples, a width and/or depth of the rail **110** may be between 0.5-4 inches larger or smaller than the base **106**. In various example, the supports **112** may be sized such a height (H) between the base **106** and the rail **110** is situated between 2-12 inches. In at least one example, the supports **112** may be configured such that a height (H) between the base **106** and the rail **110** is 4 inches.

In various examples, the utility rack may include a first housing **114** and a second housing **118**. The first housing **114** and the second housing **118** may be coupled to a base **106** and/or a storage surface **108**. In such examples, the coupling may include one or more welds, bolts, screws, snap-fit connectors, glue, rope, or any other type of coupling for securably attaching two components of a utility rack **102**. In various examples, the first housing **114** and the second housing **118** may be coupled to a bottom surface of the base **106**. In such examples, the first housing **114** and the second housing **118** may be situated under the storage surface **108**.

As discussed above, the first housing **114** may be configured to house a storage container, such as a container configured for storing liquid and/or solid material. In at least one example, the storage container may be configured to carry liquid materials, such as water, gasoline, diesel, or the like. The first housing **114** may be configured to detachably couple to the storage container, such that the storage container may be removed and replaced from the first housing **114**. In various example, the first housing **114** may include one or more first locking mechanisms **302** configured to secure the storage container in place. In the illustrative example, the first locking mechanism **302** may include an adjustable bar configured to raise into a position for locking the storage container.

In some examples, the first locking mechanism **302** may include one or more convex protrusions on an inner surface **304** of the first housing **114**. In such examples, the convex protrusion(s) may be configured to couple to one or more concave surfaces and/or indented surfaces of the storage container. Any other type of first locking mechanism **302** is contemplated herein to securably house the storage container in the first housing **114**. In various examples, the first housing **114** may include caps **306** configured to secure the storage container in the first housing **114**. In such examples, the caps **306** may extend a distance above the inner surface of the first housing **114** and may prevent the storage container from sliding out while a utility vehicle is moving.

In some examples, the first housing **114** may include a friction surface coupled, adhered or otherwise attached to an inner surface **304** thereof. The friction surface may include a rubber, plastic, or other type of coating to increase friction between the inner surface **304** and the storage container, such as to prevent movement of storage container within the first housing **114**. In some examples, the friction surface may include a surface texture, such as a knurled surface, a pitted surface, or other machined surface configured to increase friction between surfaces.

In some examples, the first housing **114** may be a single containment unit configured to house the storage container. In such examples, the first housing **114** may include a single piece of metal, plastic, composite, and/or a combination thereof with an opening **308**. In various examples, the opening **308** may be configured such that a containment unit

may be inserted into the first housing **114**. In some examples, a width (e.g., distance between a first inner surface **304** on a first inner side of the first housing **114** and a second inner surface **304** on a second inner side of the first housing **114**) of the opening **308** and/or first housing **114** may be 30-46 inches wide, and 3-8 inches tall. In some examples, the first housing **114** may include a depth between 10-24 inches. In at least one example, the first housing may include a width of 35 inches, a height of 3.25 inches and a depth of 16 inches.

In some examples, the first housing **114** may include a two-piece containment unit. In such examples, the first housing **114** may include a first containment unit **310**(**1**) and a second containment unit **310**(**2**) spaced at a distance, defining the width of the first housing **114**. As discussed above, the distance may be between 30 and 46 inches. In at least one example, the distance may be 35 inches.

In some examples, the second housing **118** may additionally or alternatively include a friction surface on an inner surface thereof. In various examples, the second housing **118** may be configured to house utility equipment, such as utility equipment **222**. The utility equipment may be detachably coupled to the second housing **118**, such that it may be removed and replaced. The utility equipment may include a chain saw, jaw saw, hedge trimmer, shears, and/or any other equipment. The utility equipment may be detachably coupled to the second housing **118**, such that it may be removed and replaced. As illustrated in FIG. **3**, the second housing **118** may include a second opening **312** configured to receive the utility equipment (or at least a portion thereof). For example, a second opening **312** may be configured to receive a blade of a chain saw.

In some examples, the second opening **312** may include a width between 0.5 inches and 6 inches. In at least one example, the width of the second opening **312** may be 1 inch. In some examples, the second opening **312** may include a height between 2 inches and 8 inches. In at least one example, the height of the second opening **312** may be 4 inches. In various examples, the second housing **118** may be configured with a depth of 10-24 inches. In at least one example, the second housing **118** depth may be 16 inches.

In examples in which the second housing **118** includes the friction surface, the friction surface may assist in securing the utility equipment in the second housing **118**. In some examples, the second housing **118** may include a second locking mechanism (not shown). The second locking mechanism, such as locking mechanism **224** may be configured to secure the utility equipment in the second housing **118**, such as to ensure that it does not fall out when a vehicle to which the utility rack **102** is coupled moves (e.g., accelerates, travels uphill, on a bumpy trail/road, etc.). The second locking mechanism may include a mechanism like first locking mechanism **302**, attachment points for a rope, a bungee, or the like.

FIG. **4** is a front perspective view of an example utility rack **202**, such as utility rack **102**, with side coupling mechanisms **204** and rear coupling mechanisms **206**. The side coupling mechanisms **204** and the rear coupling mechanisms **206** may comprise a metal material, a plastic material, a composite material, or combinations of the foregoing. In the illustrative example, the side coupling mechanisms **204** and the rear coupling mechanisms **206** are fixed (e.g., not adjustable longitudinally, laterally, rotationally, etc.). In such examples, the utility rack **202** may be configured for use on a vehicle of a particular size, shape, make, model, etc.

In various examples, the rear coupling mechanism **206** may be coupled to a base **208** and/or a rail **212** of the utility rack **202**. In various examples, the rear coupling mechanism **206** may be welded to the base **208** and/or the rail **212**. In some examples, the rear coupling mechanism **206** may be coupled to the base **208** and/or the rail **212** via one or more fasteners (e.g., bolts, screws, snap-fit fasteners, etc.).

In various examples, the utility rack **202** may include a first housing **216**, such as first housing **114** and a second housing **220**, such as second housing **118**, as described above. In various examples, the first housing **216** and/or second housing **220** may include one or more of the locking mechanisms described above, friction surfaces, and/or any of the features described above with regard to the first housing **114** and the second housing **118**.

In various examples, the first housing **216** may include a single containment unit configured to house the storage container. In such examples, the first housing **1408** may include a single piece of metal, plastic, composite, and/or a combination thereof with an opening.

FIG. **5** is a rear view of an example utility rack **102** with adjustable couplings, such as side coupling mechanisms **122** and rear coupling mechanisms **124**, as described herein.

FIG. **6** is a rear view of an example utility rack **202** with fixed couplings, such as side coupling mechanisms **204** and rear coupling mechanisms **206**, as described herein. In the illustrative example, the utility rack **202** may include one or more rear supports **602**. In at least one example, the rear support(s) **602** may prevent a storage container from sliding or otherwise moving out of the first housing **216**. In the illustrative example, the rear support(s) **602** extend vertically from a bottom portion of the first housing **216** to a top portion of the first housing. In other examples, the rear support(s) **602** may extend horizontally from a first side of the first housing **216** to a second, opposite side of the first housing **216**.

In some examples, the first housing **216** may include the rear support(s) **602**. In such examples, the rear support(s) **602** may be a portion of the first housing **216**, such as welded or otherwise coupled to the first housing **216**. In some examples, the rear support(s) **602** may be coupled to the first housing **216** at a first end and coupled to the base **208** or other portion of the utility rack at the other end.

In various examples, the utility rack **202** may additionally or alternatively include a bottom support **604**. In some examples, the bottom support **604** may be a portion of the first housing **216**. In such examples, the first housing may be substantially U-shaped. In various examples, the bottom support **604** may provide support for the storage container, to prevent movement of the storage container while housed in the first housing **216**.

Additionally or alternatively, the utility rack **202** may include a storage container support **606**. In the illustrative example, the storage container support **606** extends vertically from the base **208** of the utility rack **202**. In at least one example, the storage container support may include a coupling nut with a T-shaped handle. In various examples, the storage container support **606** may couple to an opening (e.g., threaded hole) in at least one of a longitudinal frame or a lateral frame (e.g., support frame **902**, **1002**, etc.) of the utility rack **202**. In such an example, the storage container support **606** may be configured to couple to the at least one of the longitudinal or lateral frame. In at least one example, the storage container support **606** may extend through an opening in a storage container and couple to a coupling at or proximate the center of the base **208** of the utility rack **202**. In such an example, the storage container may be securely fastened in place, with the storage container support pre-

venting sagging, slipping, or any other type of movement of the storage container when housed in the first housing **216**.

FIG. **7** is a side view of an example utility rack **102** with adjustable couplings, such as side coupling mechanisms **122** and rear coupling mechanisms **124**, as described herein.

FIG. **8** is side view of an example utility rack **202** with fixed couplings, such as side coupling mechanisms **204** and rear coupling mechanisms **206**, as described herein. In various examples, the rear coupling mechanisms **206** may be configured to couple to a portion of a utility vehicle, such as via a collar-style clamp, locking clamp, band clamp, or the like.

FIG. **9** is a top view of an example utility rack **102** with adjustable couplings, such as side coupling mechanism **122** and rear coupling mechanism **124**, as described herein. As discussed above, the utility rack **102** may include a storage surface **108** coupled to the base **106**. In various examples, the base **106** may include a support frame **902**. The support frame **902** may extend from a first inner surface of the base **106** to a second (opposite) inner surface of the base. The support frame **902** may be a portion of the base **106**, such as machined as a single piece. In some examples, the support frame **902** may be coupled to the base, such as via couplings (e.g., clamp couplings, screws, bolts, rivets, etc.).

The support frame **902** may include one or more lateral frames **902**(**1**) and one or more longitudinal frames **902**(**2**). The lateral frame(s) **902**(**1**) and longitudinal frame(s) **902**(**2**) may comprise a metal material, a plastic material, a composite material, or combinations of the foregoing. In some examples, the support frame **902** may be proximate to and configured to provide support to the storage surface in a vertical direction. In such examples, weight placed on the storage surface may further be supported by the support frame **902**. In various examples, the storage surface **108** may be welded or otherwise coupled to the support frame **902** of the base **106**. Additionally, the first housing **114** and/or the second housing **118** may be coupled to the support frame **902** of the base **106**, such as via a weld, bolt, screw, or the like.

In various examples, support frame **902** may include an opening **904** in at least one of the lateral frame **902**(**1**) or the longitudinal frame **902**(**2**). The opening **904** may be configured to receive a storage container support, such as storage container support **606**. In some examples, the opening **904** may include a threaded hole into which the storage container support may be securely fastened. In such examples, the storage container support may be configured to securely support a storage container housed within a housing of the utility rack **102**. For example, the storage container support may include a coupling screw with a T-shaped handle. The coupling screw may be securely held within the opening **904** to prevent sagging, slipping, or any other type of movement of the storage container when housed in the housing.

In the illustrative example, the storage surface **108** comprises a latticed structure. In other examples, the storage surface **108** may comprise a substantially smooth surface, a surface with horizontal and vertical cross-supports (e.g., checkered), or the like. The storage surface **108** may comprise a metal material, a plastic material, a composite material, or combinations of the foregoing. In various examples, the storage surface **108** may include a friction surface on a top (e.g., on which equipment is stored) and/or bottom side (e.g., proximate the lateral frame(s) **902**(**1**) and/or the longitudinal frame(s) **902**(**2**). The friction surface may include a rubber, plastic, or other type of coating to increase friction between the storage surface **108** and equipment, boxes, and/or other items placed thereon, such as to prevent movement of the equipment, boxes, and/or other items. In some examples, the friction surface may include a surface texture, such as a knurled surface, a pitted surface, or other machined surface configured to increase friction between surfaces.

In various examples, the storage surface **108** may include cut-outs **906**. In various examples, the cut-outs may be configured to permit movement of the rear coupling mechanisms **124** laterally along the base **106**. In such examples, the rear coupling mechanisms **124** may be adjusted to fit vehicles of different sizes, shapes, makes, models, etc.

FIG. **10** is a top view of an example utility rack **202** with fixed couplings, such as side coupling mechanisms **204** and rear coupling mechanisms **206**, as described herein. In various examples, the base **208** may include a support frame **1002**, such as support frame **902**. The support frame **1002** may comprise a metal material, a plastic material, a composite material, or combinations of the foregoing. In various examples, the storage surface **210** may be welded or otherwise coupled to the support frame **1002** of the base **208**. Additionally, the first housing **216** and/or the second housing **220** may be coupled to the support frame **1002** of the base **208**, such as via a weld, bolt, screw, or the like.

In the illustrative example, the storage surface **210** comprises a latticed structure. In other examples, the storage surface **210** may comprise a substantially smooth surface (e.g., sheet of metal), a surface with horizontal and vertical cross-supports (e.g., checkered), or the like. The storage surface may comprise a metal material, a plastic material, a composite material, or combinations of the foregoing. In various examples, the storage surface **210** may include a friction surface coupled or adhered thereto. The friction surface may include a rubber, plastic, or other type of coating to increase friction between the second surface **210** and equipment, boxes, and/or other items placed thereon, such as to prevent movement of the equipment, boxes, and/or other items. In some examples, the friction surface may include a surface texture, such as a knurled surface, a pitted surface, or other machined surface configured to increase friction between surfaces.

FIG. **11** depicts an example adjustable side coupling mechanism **1100**, such as side coupling mechanism **122**, for use on a utility rack. The side coupling mechanism **1100** may include a first end **1102** configured with a first coupling **1104** configured to couple to a base and/or housing of the utility rack. The first coupling **1104** may include a screw, bolt, band (e.g., rubber band, plastic band, etc.), rope, or other type of coupling.

The side coupling mechanism **1100** may include a second end **1106** with a second coupling **1108** configured to couple to a column bracket or other bracket of a vehicle and/or coupled to the vehicle. The second coupling **1108** may include a screw, bolt, band (e.g., rubber band, plastic band, etc.), rope, or other type of coupling. In at least one example, the second coupling **1108** may include a hole configured for a bolt to pass through the second coupling **1108** and a column bracket coupled around a bar of the vehicle.

In various examples, the side coupling mechanism **1100** may be adjustable. In the illustrative example, the first end **1102** of the side coupling mechanism **1100** includes a ball joint **1110** to permit lateral (e.g., side-to-side) and/or rotational movement of an arm **1112** of the side coupling mechanism **1100**. In other examples, the side coupling mechanism **1100** may include other types of joints to permit lateral and/or rotational movement of the arm **1112**. In some examples, such as examples with fixed side coupling mecha-

nisms **1100**, the first end **1102** may include a fixed joint. In such examples, the fixed joint may substantially preclude lateral and/or longitudinal movement of the arm **1112** from a fixed position set based on a coupling between the first end **1102** and the base and/or housing of the utility rack.

In some examples, the arm **1112** may be fixed in length. In such examples, the arm **1112** may include a length configured for a particular vehicle. As illustrated in FIG. **11**, the arm **1112** may be adjustable, such as via adjuster **1114**. In such examples, the length of the arm **1112** may be adjusted for coupling to vehicles of various sizes and/or shapes.

In the illustrative example, the adjuster **1114** may include two fasteners **1116** on opposing ends of the adjuster **1114**. In such an example, the arm **1112** may be lengthened or shortened by adjusting a position of one or both fasteners **1116**. In some examples, the fasteners **1116** may secure a respective adjuster **1114** in place, such as to maintain a determined (e.g., set) length. In other examples, the adjuster **1114** may be lengthened and/or shortened by twisting the second end **1106** such that a column **1118** of the arm may move closer to and/or farther from the first end **1102**. In various examples, the adjuster **1114** may include a hydraulic and/or pneumatic cylinder. In such examples, the adjuster **1114** may be configured to shorten and/or lengthen the arm **1112** of the side coupling mechanism **1100** based on an adjustment to fluid and/or air pressure. Though specific examples of adjusters **1114** capable of modifying a length of a side coupling mechanism **1100** are discussed herein, any other mechanical adjuster for increasing or decreasing the length of the arm **1112** is contemplated herein.

FIG. **12** depicts an example adjustable rear coupling mechanism **1200**, such as rear coupling mechanism **124**, for use on a utility rack. In various examples, the rear coupling mechanism **1200** may include a first coupler **1202** and a second coupler **1204**. In the illustrative example, the first coupler **1202** and the second coupler **1204** are configured for coupling to a substantially cylindrical bar. Though this is merely an example for illustrative purposes, and any other type of coupling for a cylindrical, or other shaped bar or surface of the vehicle and/or utility rack is contemplated. For example, the first coupler **1202** and/or the second coupler **1204** may include a collar-style clamp, locking clamp, band clamp, or the like.

In various examples, the first coupler and/or the second coupler **1204** may be configured to couple to a base, such as base **106**, and/or a rail, such as rail **110**, of the utility rack and/or a bar or another surface of a vehicle, such as vehicle **100**. In various examples, the first coupler **1202** and/or the second coupler **1204** may include a friction surface coupled, adhered, or otherwise attached to an inner surface **1206**. The friction surface may include a rubber, plastic, or other type of coating to increase friction between the first coupler **1202** and/or the second coupler **1204** and the base, rail, bar, and/or other surface, such as to prevent movement of the first coupler **1202** and/or second coupler **1204**. In some examples, the friction surface may not be adhered to the first coupler **1202** and/or the second coupler **1204**. In such examples, the friction surface may be configured to rest in between an inner surface of the first coupler **1202** and/or the second coupler **1204** and an outer surface of the base and/or the rail (e.g., first coupler **1202**) and/or the bar or other surface of the vehicle (e.g., second coupler **1204**). For example, the friction surface may include a rubber matting configured to line an inner surface of the first coupler **1202** and/or the second coupler **1204**. In some examples, the friction surface may additionally be used as a spacer, to assist in fitting the respective coupler **1202** and/or **1204** on components of the vehicle and/or the utility rack. For example, a first coupler **1202** may be configured to couple to a two-inch roll bar of a vehicle. The first coupler **1202** may have attached thereto, on an inner surface, a rubber matting as a friction surface. The rubber matting between the inner surface of the first coupler **1202** and the roll bar may enable the first coupler **1202** to securably couple to a 1¾ inch roll bar. In some examples, the friction surface may be machined into an inner surface of the first coupler **1202** and/or the second coupler **1204**. In such examples, the friction surface may include a knurled surface, a pitted surface, or other machined surface configured to increase friction between surfaces.

In various examples, the first coupler **1202** and/or the second coupler **1204** may couple to an adjustment bar **1208** via one or more fasteners **1210**. In the illustrative example, the fastener(s) **1210** include bolts and nuts. In other examples, other types of fasteners may be used, such as screws, snap-fit connectors, or the like. In various examples, the adjustment bar **1208** may include holes **1212** to which the first coupler **1202** and/or the second coupler **1204** may couple. In some examples, the adjustment bar **1208** may include at least 2 holes **1212**, one for each of the first coupler **1202** and the second coupler **1204**. In other examples, such as that illustrated in FIGS. **12** and **13**, the adjustment bar **1208** may include a plurality of holes. In such examples, positions associated with the first coupler **1202** and the second coupler **1204** may be adjusted up and down the adjustment bar **1208**, to adjust a length of the rear coupling mechanism **1200**, such as to fit on different vehicles.

In the illustrative example, the second coupler **1204** may include a first portion **1214** and a second portion **1216**. In such an example, the first portion **1214** and the second portion **1216** may be coupled together via one or more coupler fasteners **1218**. The coupler fasteners **1218**, such as fastener(s) **1210**, may include bolts, screws, snap-fit fasteners, or the like. In various examples, the first portion **1214** and the second portion **1216** may be separated from one another to allow the second coupler **1204** (e.g., the first portion **1214** and the second portion **1216**) to fit around a bar or other structure (e.g., roll bar of a vehicle, etc.). In some examples, the second coupler **1204** may include a solid piece, such as that depicted for the first coupler **1202**. In such example, the second coupler **1204** may be permanently affixed to a base and/or rail of the utility rack.

Though illustrated as a solid piece, the first coupler **1202** may additionally include a first portion and a second portion, such as that described above with regard to the second coupler **1204**. In such an example, the first coupler **1202** may be configured to be removably coupled to a bar or other structure (e.g., roll bar of a vehicle, base and/or rail of the utility rack, etc.) to couple to a bar or other structure of a vehicle.

In various examples, both of the first coupler **1202** and the second coupler **1204** may be configured to couple to a base and/or rail of the utility rack and/or the bar or other structure of the vehicle. In the illustrative example, the first coupler **1202** includes a larger diameter than the second coupler **1204**. However, this is merely for illustrative purposes, and it is contemplated that the first coupler **1202** and the second coupler **1204** may be substantially the same diameter, and/or a diameter of the second coupler **1204** may be larger than a diameter of the first coupler **1202**.

FIG. **13** is an exploded view of components of the adjustable rear coupling mechanism **1200** of FIG. **12**.

FIG. **14** is a front view of an example utility rack **1400**, such as utility rack **102** and/or utility rack **202**. As discussed above, the utility rack **1400** may include a rail **1402**, such as rail **110** and/or rail **212**, coupled to a base **1404**, such as base **106** and/or base **208** via a plurality of supports **1406**, such as supports **112** and/or supports **214**. In various examples, the rail **1402** may be situated substantially parallel to the base **1404**. In some examples, the rail **1402** may include dimensions substantially similar (e.g., less than 0.5 inches difference in width and/or depth) to the base **1404**. In some examples, a width and/or depth of the rail **1402** may be between 0.5-4 inches larger or smaller than the base **1404**. In various examples, the rail **1402** and/or the base **1404** may include a width (W**1**) between 30-50 inches. In at least one example, the rail **1402** and/or base **1404** may include a width (W**1**) of 38 inches or 46 inches.

As illustrated above, the rail **1402** and/or the base **1404** of the utility rack **1400** may include depth of 10-24 inches. In at least one example, the rail **1402** and/or the base **1404** may include a depth of 16 inches.

In various examples, the rail **1402** and the base **1404** of the utility rack **1400** may be situated a distance from one another such that the rail **1402** is a height (H**1**) above the base **1404**. The height (H**1**) may be between 2-12 inches. In such examples, the supports **1406** may couple the base **1404** to the rail **1402** at the height (H**1**). In at least one example, the supports **112** may be configured such that a height (H**1**) between the base **106** and the rail **110** is 4 inches.

As discussed above, the utility rack **1400** may include a first housing **1408**, such as first housing **114** and/or first housing **216** and a second housing **1410**, such as second housing **118** and/or second housing **220**. The first housing **1408** and the second housing **1410** may be coupled to a base **1404** and/or a storage surface **1412**. In such examples, the coupling may include one or more welds, bolts, screws, snap-fit connectors, glue, rope, or any other type of coupling for securably attaching the two components to the utility rack **1400**. In various examples, the first housing **1408** and the second housing **1410** may be coupled to a bottom surface of the base **1404**. In such examples, the first housing **1408** and the second housing **1410** may be situated under the storage surface **1412**.

As discussed above, the first housing **1408** may be configured to house a storage container, such as a container configured for storing liquid and/or solid material. In at least one example, the storage container may be configured to carry liquid materials, such as water, gasoline, diesel, or the like. The first housing **1408** may be configured to detachably couple to the storage container, such that the storage container may be removed and replaced from the first housing **1408**. In various example, the first housing **1408** may include one or more first locking mechanisms configured to secure the storage container in place.

In some examples, the first housing **1408** may include a friction surface coupled, adhered or otherwise attached to an inner surface thereof. The friction surface may include a rubber, plastic, or other type of coating to increase friction between the inner surface and the storage container, such as to prevent movement of storage container within the first housing **1408**. In some examples, the friction surface may include a surface texture, such as a knurled surface, a pitted surface, or other machined surface configured to increase friction between surfaces.

In some examples, the first housing **1408** may be a single containment unit configured to house the storage container. In such examples, the first housing **1408** may include a single piece of metal, plastic, composite, and/or a combination thereof with an opening **1414**. In various examples, the opening **1414** may be configured such that a containment unit may be inserted into the first housing **1408**. In some examples, a width (W**2**) (e.g., distance between a first inner surface on a first inner side of the first housing **1408** and a second inner surface on a second inner side of the first housing **1408**) of the opening **1414** and/or first housing **1408** may be 30-46 inches wide. In at least one example, the first housing **1408** may include a width (W**2**) of 35 inches.

In some examples, the first housing **1408** may include a height (H**2**) between 3-8 inches tall. In at least one example, the first housing **1408** may include a height (H**2**) of 3.25 inches.

In some examples, the first housing **1408** may include a depth (not illustrated in FIG. **14**) between 10-24 inches. In at least one example, the depth of the first housing **1408** may be 16 inches.

In the illustrative example, the first housing **1408** includes a single containment unit, with a top **1416** and two sides **1418**(**1**) and **1418**(**2**). In such an example, the top **1416** and/or the two sides **1418**(**1**) and **1418**(**2**) may be coupled to the base **1404** and/or the storage surface **1412**. In some examples, the first housing **1408** may include a two-piece containment unit. In such examples, the first housing **1408** may include a first containment unit, such as first containment unit **310**(**1**) and a second containment unit, such as second containment unit **310**(**2**) spaced at a distance, defining the width (W**2**) of the first housing **1408**. As discussed above, the width (W**2**) may be between 30-46 inches. In at least one example, the width (W**2**) may be 35 inches.

As discussed above, the utility rack **1400** may include a second housing **1410**. In some examples, the second housing may include a friction surface on an inner surface thereof. In various examples, the second housing **1410** may be configured to house utility equipment, such as utility equipment **222**. The utility equipment may be detachably coupled to the second housing **1410**, such that it may be removed and replaced. The utility equipment may include a chain saw, jaw saw, hedge trimmer, shears, and/or any other equipment. The utility equipment may be detachably coupled to the second housing **1410**, such that it may be removed and replaced. As illustrated in FIG. **14**, the second housing **1410** may include a second opening **1420**, such as second opening **312**, configured to receive the utility equipment (or at least a portion thereof). For example, a second opening **1420** may be configured to receive a blade of a chain saw.

In some examples, the second opening **1420** may include a width (W**3**) between 0.5 inches and 6 inches. In at least one example, the width (W**3**) of the second opening **1420** may be 1 inch. In some examples, the second opening **1420** may include a height (H**3**) between 2 inches and 8 inches. In at least one example, the height of the second opening **1420** may be 4 inches. In various examples, the second housing **1410** and/or the second opening **1420** may be configured with a depth of 10-24 inches. In at least one example, the second housing **118** and/or second opening **1420** depth may be 16 inches.

Although the subject matter has been described in language specific to structural features and/or methodological acts, it is to be understood that the subject matter defined in the appended claims is not necessarily limited to the specific features or acts described. Rather, the specific features and acts are disclosed as illustrative forms of implementing the claims.

What is claimed is:

1. A utility rack comprising:

a base;

a rail situated a distance from and parallel to the base;
at least two vertical supports extending from the base to the rail;
a storage surface coupled to a top surface of the base;
a first side coupling coupled to a first side of the base at a first end of the first side coupling and to a first component of a vehicle at a second end of the first side coupling;
a second side coupling coupled to a second side of the base at a first end of the second side coupling and to a second component of the vehicle at a second end of the second side coupling;
at least one rear coupling configured to couple to a third side of the base at a first end of the at least one rear coupling and a third component of the vehicle at a second end of the at least one rear coupling;
a first housing coupled to a bottom surface of the base, wherein the first housing is configured to house a storage container;
a second housing coupled to at least one of the bottom surface of the base or the first housing and configured to house at least a portion of a unit of utility equipment; and a support frame extending from a first inner surface of the base to a second inner surface of the base; wherein: the support frame is proximate to and configured to provide support in a vertical direction to the storage surface, and the support frame comprises a coupling; and a coupling screw configured to couple to the coupling at a first end of the coupling screw and secure the storage container within the first housing, wherein the coupling screw comprises a handle at a second end of the coupling screw.

2. The utility rack as claim **1** recites, wherein the storage container comprises a container configured to hold gasoline or diesel fuel.

3. The utility rack as claim **1** recites, wherein the second housing is configured to house a blade of a chainsaw.

4. The utility rack as claim **1** recites, wherein at least one of the at least one rear coupling, the first side coupling, or the second side coupling comprises an adjustable coupling.

5. The utility rack as claim **1** recites, wherein a top portion of the storage surface comprises a friction surface, the friction surface comprising at least one of:

a surface texture;
a plastic; or
a rubber.

6. The utility rack as claim **1** recites, wherein an inner surface of at least one of the first housing or the second housing comprises a friction surface, the friction surface comprising at least one of:

a surface texture;
a plastic; or
a rubber.

7. The utility rack as claim **1** recites, wherein the first housing further comprises at least one locking mechanism configured to secure the storage container in place within the first housing.

8. The utility rack as claim **1** recites, wherein the second housing further comprises a locking mechanism configured to secure the unit of utility equipment in place within the second housing.

9. A rack comprising:

a base;
a storage surface coupled to the base;
a first side coupling extending from the base, wherein the first side coupling extends from a first side of the base at a first end of the first side coupling and is configured to couple to a first component of a vehicle at a second end of the first side coupling;
a second side coupling extending from the base, wherein the second side coupling extends from a second side of the base at a first end of the second side coupling and is configured to couple to a second component of the vehicle at a second end of the second side coupling;
at least one rear coupling configured to couple to a third side of the base at a first end of the at least one rear coupling and a third component of the vehicle at a second end of the at least one rear coupling;
a first housing coupled to a bottom surface of the base, wherein the first housing is configured to house a storage container; and
a second housing coupled to at least one of the bottom surface of the base or the first housing and configured to house at least a portion of a unit of utility equipment; wherein the at least one rear coupling comprises an adjustment bar, a first clamp coupling coupled to a first part of the adjustment bar, and a second clamp coupling coupled to a second part of the adjustment bar, wherein: the first clamp coupling is configured to couple to the third side of the base; and the second clamp coupling is configured to couple to the third component of the vehicle.

10. The rack as claim **9** recites, wherein the storage container comprises a container configured to hold gasoline or diesel fuel.

11. The rack as claim **9** recites, wherein the second housing is configured to house a blade of a chainsaw.

12. The rack as claim **9** recites, wherein at least one of the first clamp coupling or the second clamp coupling comprises a friction surface on an inner surface of a respective clamp coupling.

13. The rack as claim **9** recites, wherein the first side coupling comprises a first adjuster and the second side coupling comprises a second adjuster, the first adjuster and the second adjuster enabling the first side coupling and the second side coupling to be lengthened or shortened.

14. The rack as claim **13** recites, wherein the first adjuster comprises at least one first fastener and the second adjuster comprises at least one second fastener, the at least one first fastener and the at least one second fastener being configured to secure the first side coupling and the second side coupling at a determined length.

15. The rack as claim **9** recites, wherein an inner surface of at least one of the first housing or the second housing comprises a friction surface, the friction surface comprising at least one of:

a surface texture;
a plastic material; or
a rubber material.

16. The rack as claim **9** recites, wherein at least one of the first housing or the second housing comprises a locking mechanism configured to secure the storage container or the unit of utility equipment in place within a respective housing.

17. The rack as claim **9** recites, wherein the base, the storage surface, the first housing, and the second housing comprise at least one of:

aluminum;
steel; or
titanium.

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